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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/561,299

12/15/2005

Jean-Pierre Joly

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EXAMINER

ZARNEKE, DAVID A

ART UNIT

PAPER NUMBER

2891

MAIL DATE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/561,299	Applicant(s) JOLY ET AL.	
	Examiner David A. Zarneke	Art Unit 2891	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 August 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-27 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>8/26/08</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

Applicant's arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1-15 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's Admitted Prior Art (hereafter AAPA), in view of Kim et al., US Patent Application Publication 2007/0087528.

AAPA teaches a method of fabricating a die containing an integrated circuit comprising active components and passive components, the method comprising:

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producing a first substrate containing at least one active component and a second substrate containing critical passive components; and

bonding the two substrates wherein the bonding comprises performing a layer transfer (specification: 3, 22+).

AAPA fails to teach after bonding of the first and second substrates, producing at least one interconnection line between the components of said first and second substrates, said interconnection line passing through the second substrate.

Kim teaches after bonding of the first and second substrates, producing at least one interconnection line between the components of said first and second substrates, said interconnection line passing through the second substrate. (figures 2C-2M).

It would have been obvious to one of ordinary skill in the art at the time of the invention to use the interconnection line of Kim in the invention of AAPA because it allows for an external contact for the device (abstract).

Regarding claim 2, AAPA teaches the at least one active component comprises transistors (1, 11+).

With respect to claim 3, AAPA teaches the critical passive components comprise at least one capacitor and at least one microelectromechanical system (MEMS) (1, 11+).

As to claim 4, AAPA teaches the critical passive components comprise at least one of one capacitor or at least one microelectromechanical system (MEMS) (1, 11 +).

In re claim 5, AAPA teaches the dielectric material of said at least one capacitor comprises is a perovskite (2, 10+).

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Regarding claim 6, though AAPA and Kim fail to teach the second substrate comprises an electrically conductive material, it would have been obvious to one of ordinary skill in the art at the time of the invention to substitute an electrically conductive material as the insulating second substrate (5, 66+) of Kim because an electrically conductive material could act as a heat sink or shielding. The substitution of one known equivalent technique for another may be obvious even if the prior art does not expressly suggest the substitution (Ex parte Novak 16 USPQ 2d 2041 (BPAI 1989); In re Mostovych 144 USPQ 38 (CCPA 1964); In re Leshin 125 USPQ 416 (CCPA 1960); Graver Tank & Manufacturing Co. V. Linde Air Products Co. 85 USPQ 328 (USSC 1950).

With respect to claim 7, while AAPA and Kim fail to teach the second substrate comprises producing a dielectric material, it would have been obvious to one of ordinary skill in the art at the time of the invention to use a dielectric material in the invention of AAPA and Kim because a dielectric material would protect the passive components. The use of conventional materials to perform their known functions is obvious (MPEP 2144.07).

As to claim 8, while Kim fails to teach the second substrate comprises producing perovskite, it would have been obvious to one of ordinary skill in the art at the time of the invention to use a perovskite as the second substrate in the invention of Kim because a perovskite is a conventional dielectric material for their high dielectric constants. The use of conventional materials to perform their known functions is obvious (MPEP 2144.07).

In re claim 9, AAPA teaches forming dielectric insulation trenches in said second substrate during the production of said second substrate (4, 14+).

Regarding claim 10, AAPA teaches using at least one non-critical passive component during the production of the said second substrate in that it acknowledges the need for plural passive components to be formed on the second substrate (3, 31+).

With respect to claim 11, AAPA teaches the non-critical passive component comprises producing a capacitor in trenches (4, 14+).

As to claim 12, AAPA teaches at least one inductor in the vicinity of a face of the second substrate opposite a bonding face after said bonding of the two substrates (5, 3+).

In re claim 13, AAPA teaches at least one inductor is produced on said inductive insulation trenches previously produced in said second substrate (5, 3+).

Regarding claim 14, AAPA teaches at least one interconnection line passing through all or part of the second substrate after said bonding said first and second substrates (5, 3+).

With respect to claim 15, AAPA and Kim teach a die fabricated by a method according to claim 13.

As to claim 27, though AAPA and Kim fail to teach said at least one inductor and at least one of said interconnection lines are produced during a same process step, it would have been obvious to one of ordinary skill in the art at the time of the invention to produce the inductor and the interconnection lines at the same time in the invention of AAPA and Kim because the performance of two steps simultaneously, which have

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previously been performed in sequence was held to have been obvious [In re Tatincloux 108 USPQ 125 (CCPA 1955)].

Claims 16-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's Admitted Prior Art (hereafter AAPA), in view of Kim et al., US Patent Application Publication 2007/0087528.

AAPA teaches a die containing an integrated circuit comprising active components and passive components and including a single stack of layers, wherein said die comprises an interface between two of said layers such that a said first portion of the die situated on one side of said interface contains at least one active component of said active components and a second said portion of the said die contains critical components of said passive components (see rejection of claim 1).

AAPA fails to teach the die comprising at least one interconnection line between the components of said first and second portions, said interconnection line passing through the second portion.

Kim teaches after bonding of the first and second substrates, producing at least one interconnection line between the components of said first and second substrates, said interconnection line passing through the second substrate. (figures 2C-2M).

It would have been obvious to one of ordinary skill in the art at the time of the invention to use the interconnection line of Kim in the invention of AAPA because it allows for an external contact for the device (abstract).

As to claim 17, AAPA teaches the critical passive components comprise at least one capacitor and at least one MEMS enclosed in a cavity situated inside said die (1, 11+).

In re claim 18, AAPA teaches the critical passive components comprise at least one capacitor or at least one MEMS enclosed in a cavity situated inside said die (1, 11+).

Regarding claim 19, AAPA teaches the capacitor comprises a dielectric material comprising perovskite (2, 10+).

With respect to claim 20, AAPA teaches the die further comprises dielectric insulation trenches (4, 14+).

As to claim 21, AAPA teaches the integrated circuit further comprises at least one non-critical passive component such as a capacitor in trenches (4, 14+).

In re claim 22, AAPA teaches the non-critical passive component comprises a capacitor in trenches (4, 14+).

Regarding claim 23, AAPA teaches the active components are disposed in the vicinity of a first face of the die and wherein said integrated circuit further comprises at least one inductor situated in the vicinity of the said face of the die opposite said first face (5, 3+).

With respect to claim 24, AAPA teaches the at least one inductor is situated on inductive insulation trenches (5, 3+).

As to claim 25, AAPA teaches the active components are disposed in the a vicinity of a first face of said die and said die further comprises at least one

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interconnection line that emerges in the vicinity of said face of said die opposite said first face (5, 3+).

In re claim 26, AAPA teaches the active components are disposed in a vicinity of a first face of said die and said die further comprises at least one interconnection line that emerges in the vicinity of said face of said die opposite said first face (5, 3+).

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David A. Zarneke whose telephone number is (571)-272-1937. The examiner can normally be reached on M-Th 7:30 AM-6 PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sue Purvis can be reached on (571)-272-1236. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/David A. Zarneke/
Primary Examiner, Art Unit 2891
12/6/08